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A STRUCTURAL SOLUTION TO ROAMING IN EUROPE

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**TONY SHORTALL**

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## **Abstract**

This paper suggests that international roaming markets suffer from structural flaws in the way that roaming agreements are established in Europe. The initial roaming interventions by the European Commission in 2007 have been very welfare enhancing and the transfer of producer surplus to consumers has brought significant benefits to end users. Nevertheless, there are clear opportunity costs of maintaining and/or extending the current roaming Regulation. The price for wholesale roaming services in a given country is driven principally by the amount of traffic that an operator is willing to send back to the country requesting a price offer and not on the basis of the roaming services requested. The paper suggests that by breaking the link between the prices offered in one country and the volume of returned traffic to the other country will enable the wholesale market for international roaming to operate competitively. It is further suggested that retail price regulation is unwarranted when the wholesale market can operate competitively irrespective of the issue of the retail elasticity of demand for these services. Preliminary suggestions are put forward as to how policy makers could transition from the current regime to a future market based regime by putting a number of required enablers in place.

## **Keywords**

Roaming regulation, mobile telephony, European single market





## Introduction\*

International Roaming is a service that allows the customer of a Mobile Network Operator (MNO) in one country to obtain service from an MNO in another country using the same handset and the same telephone number, facilitated by a common technology and a wholesale inter-operator contract.

Initially with the introduction of GSM technologies (as the successor to previous analogue technologies which typically did not support roaming services) spectrum was allocated successively first in the 900Mhz range, then 1800 and so on. Early entrants had a distinct market advantage in terms of their ability to have wider coverage and also a significant first-mover advantage in building larger communities of interest (on-net customer bases). An initial concern was that newer mobile entrant operators using 1800Mhz frequencies would not be able to reach agreements with incumbent mobile operators and hence end up with limited or no roaming partners. The industry itself proposed a solution whereby roaming services had to be offered on a non-discriminatory basis to all operators seeking roaming in a particular country. In effect this was a cartel in contravention of Article 101 (1) but since the objective was the promotion of competition under Article 101(3) and exemption was sought. In 1996 the MNOs notified to the European Commission (DG Competition) the Standard Terms for International Roaming Agreements (STIRA) for an exemption under 101(3) from the prohibitions set out in 101(1) of the European treaties. They were granted an exemption subject to a number of changes, including the introduction of the Inter Operator Tariff (IOT) scheme of non-discriminatory wholesale prices.

A major revision of the telecommunications legislation took place which resulted in a series of directives (the 2002 Framework)<sup>1</sup> which were transposed into the national laws of the Member States becoming effective in July 2003. The new approach was incorporated in the 2002 telecommunications framework which defined markets at EU level which would *a priori* be suitable for *ex ante* regulation, then having Member States analyse the markets, identifying any operators with dominance and imposing on them one or more of a set of specified remedies. One of the markets identified in Annex 1 of the Framework Directive as a market that National Regulators Authorities (NRAs) were obliged to analyse was the National Market for International Roaming services. The definition of the market was set out in the Recommendation on relevant markets<sup>2</sup>.

NRAs were reluctant to address the roaming market identified, normally on the basis of two issues; first there was a normal deference to an investigation by DG Competition which had started in practice by 1999 though not officially until sometime afterwards. Furthermore, the initial market analyses that were conducted failed to find any dominant MNOs, imposed no remedies and offered no alternatives. A revision of the Recommendation on Relevant markets<sup>3</sup> dropped roaming from the list on the basis that the Regulation (717/2007) obviated the need for a market analysis, thus effectively ending the basis for NRAs to regulate the market.

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\* Independent economic consultant. Any views expressed are solely attributable to the author, further comments and suggestions welcomed at tony.shortall@telage.net

<sup>1</sup> Directive 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities [2002] OJ L 108/7 (Access Directive); Directive 2002/20/EC on the authorisation of electronic communications networks and services [2002] OJ L 108/21 (Authorisation Directive); Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services [2002] OJ L 108/33 (Framework Directive); Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services [2002] OJ L 108/51 ("Universal Service Directive"); Decision No.676/2002/EC of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community ("Spectrum Decision").

<sup>2</sup> OJ L 114, 8.05.2003, p. 45

<sup>3</sup> OJ L 344, 28.12.2007, p. 65

The first Roaming Regulation<sup>4</sup> (717/2007) was proposed by the Commission and was agreed through the normal negotiation process with the European Parliament and the Council of Ministers. Those negotiations centred on the need for retail price controls, the legitimacy of the use of Article 114 and considerations regarding the merits of the proposal. One major oversight at that time appears to have been the omission of SMS from the Regulation since it suffered from the exact same problems associated with voice traffic.

On 23 May 2007 the European Parliament voted for a text on the EU Regulation of International roaming charges within Europe, which later was endorsed by the EU Ministers at their meeting on 7 June 2007 which was to last for 3 years. The EU roaming regulation entered into force on 30 June 2007. This intervention was succeeded with a second roaming regulation (544/2009) which extended and lowered the existing caps on making and receiving voice calls and extended the caps to also cover the previously omitted SMS (wholesale and retail) and data transfers (wholesale caps only).

The new European regulation on roaming also forces operators to cap roaming data charges at €50 month. To comply, operators must first caution users when they start using data, then when reach 80% of the cap and then cut them off at 100% of the cap unless the user has agreed different pre-determined limits. The move is designed to protect consumers from 'bill shock' when they surf the Internet with their mobile phones and laptops while travelling in other EU countries. Under roaming Regulation No. 544/2009, mobile phone operators are obliged to offer their customers the monthly €50 cut-off limit, but they can also offer them any other limit. Until 1 July 2010, customers need to make a deliberate choice in order to benefit from a cut-off limit but customers who do not make a choice by 1 July 2010 will have the cut-off limit set at €50 by default as from that date.

Member States' national telecoms regulators are responsible for ensuring that mobile phone operators comply with the rules on cut-off mechanisms for data roaming in each EU country. The Commission will analyse the functioning of the roaming Regulation, including the provisions on data roaming, in an interim report due in June 2010 and in a more extensive review in June 2011.

The evolution of the roaming Regulation can be seen in Table 1 below though further reductions in the form of a glide path occur in subsequent periods.

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<sup>4</sup> For a thorough description of the Roaming Regulations see Sutherland, Ewan, 2009 The European Union Roaming Regulations <http://ssrn.com/abstract=1574981>

**Table 1. Retail Roaming price limits in EU and EEA countries**

	<b>In force from (dd.mm.yyyy)</b>					
	<b>In force until (dd.mm.yyyy)</b>					
<b>service</b>	<b>unit</b>					
Outgoing calls to any EU and EEA number	(price of 1 minute) (billing interval)	0.49	0.46	0.43	0.39	0.35
		-		per-second starting from 31 <sup>st</sup> second		
Incoming calls from any number	(price of 1 minute) (billing interval)	0.24	0.22	0.19	0.15	0.11
		-		per-second starting from 1 <sup>st</sup> second		
Incoming calls redirected to voice mail	(price of 1 minute)	0.73	0.68	0.62	<i>free of charge</i>	
Outgoing SMS to EU and EEA	(price of 1 message)	-			0.11	
Incoming SMS	(price of 1 message)	-			free of charge	

**Wholesale Roaming price limits in EU and EEA countries**

Outgoing calls to any EU and EEA number	(price of 1 minute) (billing interval)	0.3	0.28	0.26	0.22	0.18
		-		per-second starting from 31 <sup>st</sup> second		
Outgoing SMS to any EU and EEA number	(price of 1 message)	-			0.04	
Incoming SMS	(price of 1 message)	-			free of charge	
Internet	(price of 1 MB) (billing interval)	-		1	0.8	0.5
		-		<i>per 1 KB starting from 1<sup>st</sup> KB</i>		

In terms of its effect the roaming regulation has led to a situation where prices have tended to lie up against the prices put into the market by the regulators.

The European Commission in its 15<sup>th</sup> Implementation Report<sup>5</sup> notes that ‘In general the Roaming Regulation appears to be implemented well in most Member States with only a few difficulties reported. In most cases it seems that prices have been set close to the caps and, with only few exceptions (Hungary and Romania), retail data roaming prices have not yet fallen despite the lower wholesale charges.’

These findings have been largely confirmed by BEREC (the Body of European Regulators for Electronic Communications, the umbrella grouping for NRAs in the EU) who have noted<sup>6</sup> that ‘average Eurotariff voice roaming rates remained at or near the regulated caps in many Member States, but overall fell slightly during the data collection period. For calls made, the average Eurotariff fell from €0.425 in Q2 2009 (compared to a cap of €0.46) to €0.381 in Q4 2009 (with a cap of €0.43). The average Eurotariff rate was nearer the caps for calls received, but also fell slightly from €0.201 in Q2 2009 (with a cap of €0.22) to €0.165 in Q4 2009 (with a cap of €0.19).’

The market outcomes are very close to the minimum predicted by the Regulations put in place, potentially casting doubt on the future ability to withdraw detailed price regulation of these services. Many firms have also drawn attention to the unanticipated consequences of the regulations such as the transparency obligations (i.e. cut off limits) which consumed far more development resources than had been anticipated by either industry or public policy makers. The implication is clearly other products (and indeed price changes) did not happen as a result of the obligations imposed on firms by the Regulation. The roaming market was clearly distorted and the initial roaming regulation very correctly redressed some of that distortion in favour of end-users. The initial roaming interventions have been very welfare enhancing and the transfer of producer surplus to consumers has brought benefits. Nevertheless, there are clear opportunity costs of maintaining and/or extending the current roaming Regulation. These are opportunity costs which policy makers cannot ignore and which legislators are rightly concerned. Incremental or creeping increments to the roaming regulation are likely to deliver more marginal benefits to consumers but may place considerable burdens on producers.

This paper seeks to identify the cause of the roaming problem which it is suggested lies in the structure of the roaming contracts negotiated and proposes a possible solution which would be market driven and thereby both less distorting of the market and self-sustaining.

## **Problem Identification**

In order to demonstrate the proposed origin of the problem we will start with a stylised example for voice calls. The same considerations apply equally to the other services.

In this hypothetical wholesale market, a mobile network operator (“MNO”) in Country A offers roaming services to an MNO located in another country, which allows that foreign MNO to offer retail roaming services to its own end customers when they are travelling in Country A. For this purpose, the foreign MNOs will sign an international roaming agreement with one or more MNOs in Country A in order for their customers to receive and make voice calls while roaming on these operators’ networks. As laid out in the Standard Terms for International Roaming Agreements (“STIRA”), issued by the

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<sup>5</sup> (COM(2010)253) - 25 May 2010 available here:

[http://ec.europa.eu/information\\_society/policy/ecom/doc/implementation\\_enforcement/annualreports/15threport/comm\\_en.pdf](http://ec.europa.eu/information_society/policy/ecom/doc/implementation_enforcement/annualreports/15threport/comm_en.pdf)

<sup>6</sup> BoR (10) 12 BEREC Roaming compliance report available here

[http://berec.europa.eu/doc/berec/bor\\_10\\_12.pdf](http://berec.europa.eu/doc/berec/bor_10_12.pdf)

GSM Association<sup>7</sup> (GSMA), Country A MNOs will charge foreign MNOs at the wholesale level a so called Inter Operator Tariff (“IOT”) for any call or SMS which has been delivered while the foreign MNO’s customer was roaming on a specific network in Country A.

The traffic of subscribers of foreign MNOs are not allocated randomly among the Country A networks but traffic from foreign MNOs is directed to a specific network operator of their choice, depending on whether they belong to a roaming alliance or group and on tariffs and discounts. Foreign MNOs could therefore respond to a variation in IOTs by directing their traffic onto an alternative network if it offered lower IOTs at the wholesale level and could therefore notionally react with different prices at the retail level reflecting the lower IOTs.

The way the current market dynamic in the wholesale roaming market operates is described in the paragraphs below and describes why this price competition at the wholesale level is largely ineffective.

In our stylised example let’s consider that there are two countries (A and B) and each country has two operators, one with 90% (AA and BB) and the other with 10% (Aa and Bb). The networks in country A negotiate with the networks in country B for roaming services for their customers. A standard roaming agreement covers the following elements, voice calls, SMS, and data.

In the normal course of events the negotiations will hinge on several factors. With traffic direction, operators can choose to direct a specific proportion of their customer’s traffic to a particular operator with a high degree of accuracy. It is of course possible for a customer to direct their traffic manually and thereby to override the preferences of the home network but this happens to a very limited extent. Data traffic direction is less developed than voice for the moment but this too is evolving quickly.

This traffic direction creates an interesting dynamic which the author believes lies at the heart of the roaming problem in Europe. Negotiations between the different operators typically revolve around agreeing to ‘balance traffic’ to the greatest extent possible and then to apply a marginal rate to the remainder of traffic. The two 90% operator obviously have the vast majority of customers in their respective countries and therefore have a lot of traffic that they can direct to one operator or both operators in certain proportions. Clearly, the small operators are in the reverse position with very little traffic to set against their negotiating party.

The more traffic the operator in Country A has to send to Country B, the greater the negotiating power that Country A operator has in setting the roaming price offered to Country B (and vice versa). AA can offer a significantly higher price (than Aa) to both BB and Bb and both can be obliged to accept such an offer, not because it is the lowest price for roaming services available in Country A but because AA customers will make up 90% of all roaming customers in Country B. Aa finds itself in a more marginal position offering lower prices since it has vastly less customers roaming in Country B and so its price offered is not subject to a significant mark-up. However, though Aa is offering a lower price that price is still unattractive because of the roamed in Country B market and the limited traffic Aa can offer.

Let’s suppose that operator AA asks for offers from operators in country B for an expected million minutes of roaming traffic, BB and Bb both respond and they propose:

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<sup>7</sup> The GSM Memorandum of Understanding, was an agreement signed in 1987 between all the major European operators to work together to promote GSM inter alia including a provision to provide roaming services. That MoU was a precursor to the establishment of the GSM Association.

- Operator Bb proposes:
  - wholesale rate of 0,4 EUR per minute for the proposed 1 million minutes and offers to send 100,000 minutes back to AA.
- Operator BB proposes:
  - wholesale rate of 0,7 EUR per minute for the proposed 1 million minutes
  - additionally in return operator AA offers 900,000 minutes of outgoing calls in Operator's A network for the same price of 0,7 EUR per minute

In this situation AA will sign a discount agreement based on an offer from Operator BB which gives the highest cost. The reason is that in order to meet overall revenue targets, even if costs are not lowered as much as alternative offers, this is more than offset by achieving additional traffic for inbound roaming (customers of Operator BB in network of Operator AA). Indeed the net wholesale payments in this example would be €36,000 if operator Bb with the lower price is selected while the net wholesale payments would only be €7,000 at the higher price where AA is selected.

The scenario shows the reason that operators prefer to exchange traffic on a bilateral basis even if it keeps a higher cost solution, rather than lowering costs which would allow more competitive retail prices and greater retail competition. The key problem is caused by the fact that traffic exchange is simultaneously cost becoming revenue and service margin.

The proposed solution would be based on a general rule that makes only unilateral traffic offers which could not be connected with traffic exchange.

There would appear to be two effective means of achieving unilateral traffic offers in the market. The first means of achieving unilateral traffic exchange may be simply by making a legally binding obligation to deal unilaterally and to prohibit making the price of roaming services dependent on returned traffic. If this route was pursued then a major revision of existing contracts would need to be put in place. It could be facilitated by the creation of a trading platform where contracts could be centralized. Such a centralized platform already exists in a limited form and we discuss below how it might be adapted to the current purpose.

The second means by which unilateral traffic exchange could be achieved could be with the creation of a spot market for roaming where all operators would be obliged to trade. Again this issue is dealt with in more detail below but it is worth noting that this solution could again leverage the existing platforms which exist for traffic exchange and also that the existing technical solutions (including the support of operator specific short codes etc.) could still be supported with such a solution.

A major limitation on the first suggestion given above, i.e. making the offered price of roaming traffic dependant on the volumes of returned traffic illegal, concerns framing operational legislation which could be policed effectively.

One possibility which the author believes should be explored is whether the existing practice of making the price of in-country roaming dependent on the volume of traffic directed to the sending operator on the return leg is potentially in breach of Article 101 (1) e.

Article 101 (1) of the treaties states that

*1. The following shall be prohibited as incompatible with the internal market: all agreements between undertakings, decisions by associations of undertakings and concerted practices which may affect trade between Member States and which have as their object or effect the prevention, restriction or distortion of competition within the internal market, and in particular those which:*

*(a) directly or indirectly fix purchase or selling prices or any other trading conditions;*

*(b) limit or control production, markets, technical development, or investment;*

*(c) share markets or sources of supply;*

*(d) apply dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage;*

*(e) make the conclusion of contracts subject to acceptance by the other parties of supplementary obligations which, by their nature or according to commercial usage, have no connection with the subject of such contracts.*

Article 101 (3) allows certain exemptions from these obligations where consumers would be ultimately beneficiaries of the agreement, however such an exemption be at odds with the analysis presented above. While in the past, when the original STIRA agreements were put in place there was a clear benefit to facilitating the development of the new 1800 GSM operators across Europe which offset the limitations which existed at that time, these operators are now well established. Indeed with the removal of the original comfort letters, one specific element of the subsequent investigation by DG Competition concerned the existence or otherwise of cartel practices in the roaming market. It should be noted that under the previous regime (which was covered by the article 81(3) exemption, all operators were obliged to make the same offer to all operators from the same country (i.e. there was no price competition). While DG Competition's investigation did not find any continued cartel activity, the new form of the contract negotiation was not established at that time and not subject to rigorous scrutiny.

## **A structural proposal**

A general rule that permits only unilateral traffic offers (which cannot be connected with traffic exchange) makes a fundamental change to the trading process in the international roaming market. Using this solution, in the case described above, Operator AA would choose Bb which is the most cost efficient and Operator AA may freely create new retail offers based on the lower retail charges (and more likely smaller operators such as Aa can do the same).

Whether such agreements are in breach of the existing competition provisions or not, or whether breaking the linkage between in-country roaming and returned traffic would require new legislation, we consider below what might happen to the market dynamic in the event that the negotiations were confined to roaming in a particular country and were prohibited from being linked to unrelated factors.

In such an event, all operators would come to the market with their share in their domestic market representing a good proxy for the amount of traffic that they would be purchasing and in turn would dictate the amount of buyer power they could exercise. In the roamed-in market any operator who had sufficient coverage and capacity could compete for all or part of any roaming operator's traffic. Subject to capacity and coverage constraints it can be presumed in such circumstances that the cheapest offer would capture the vast majority<sup>8</sup> of traffic in the market (since the return leg is now irrelevant).

Such a price effect would be likely to oblige other operators to compete on prices offered rather than traffic traded.

In much the same way that it is argued that above-cost termination rates create a floor to the retail pricing, above cost roaming charges can have a similar impact. Where termination rates exceed an efficient level of cost they tend to make it difficult for carriers to offer flat-rate calling plans due to the

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<sup>8</sup> It might be that redundancy or coverage requirements may result in multiple partners.

uncertainty regarding likely levels of customer take-up of such plans.<sup>9</sup> As noted by Scott Marcus and others, in the presence of a higher cost base "[a] flat rate plan would have to address many business risks, including the prospect that the plan might attract large numbers of self-selected customers who had significantly above-average usage patterns". High per-minute termination costs thus impose an artificial per-minute cost structure on carriers, which are passed through to customers in the form of per-minute retail rates. According to some commentators such usage sensitive rates would likely reduce the use of the network below efficient levels<sup>10</sup>. Marcus notes further that consumers appear to have a strong preference for flat rate retail pricing arrangements (or banded flat rate plans where customers enjoy a flat rate so long as they don't exceed a maximum number of minutes) due to their predictability and relative simplicity and tend to respond to flat rate plans by making extensive use of the service in question. As communications services are typically characterised by significant upfront costs and low marginal costs, such flat rate plans can be efficient for both the consumer and the provider and promote a higher utilisation of the service. Precisely the same considerations apply *mutatis mutandis* to roaming.

Furthermore, a working paper by the FCC's economist Patrick DeGraba notes that the ISP market illustrates the importance of rate structure on usage. When AOL changed from usage sensitive rates to a flat charge for unlimited usage in 1996 the number of customers and usage per customer rose dramatically and other competitors soon followed<sup>11</sup>. Similarly the introduction by mobile operators in the US of pricing plans that include buckets of minutes appear to have contributed significantly to the growth in wireless usage. The FCC also notes AT&T Wireless's Digital One Rate plan, introduced in May 1998, as one notable example of an independent pricing action that altered the market to the benefit of consumers<sup>12</sup>. Today all of the US's nationwide operators offer some version of a national rate pricing plan in which customers can purchase a bucket of minutes to use on a nationwide or nearly nationwide network without incurring roaming or long-distance charges.

Reducing roaming rates to the cost of providing this service should therefore provide operators with greater scope for offering various flat-rate packages as a lower wholesale cost will reduce their exposure in the event of a significant increase in usage at the retail level. The change in customer usage patterns and any associated increase in ARPU<sup>13</sup> will of course depend on the level of customer's price sensitivity. A danger in roaming is that with prices potentially well above cost, the point of the demand curve may distort the view of the price elasticity of demand. For instance, if prices are a long way above cost then a 5, 10 or 20% reduction in prices may have little or no impact on prices. If however, prices fell by 50%, price elasticity might be observed and much smaller price movements from the new (lower) price could exhibit far greater price elasticity of demand.

It is worth noting that in the discussions to date on the impact of Regulation 544/2009 has led to two competing views in the market as to what the impact of the lower prices in the market have been. On the one hand larger operators such as Vodafone have publicly stated that they have not noticed any particular evidence of a price elasticity of demand. On the other hand, smaller operators such as KPN International have reported a significant increase in traffic since the introduction of the lower retail

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<sup>9</sup> See J Scott Marcus "Call termination fees: The US in global perspective. See also Laffont and Tirole, Competition in Telecommunications. See also Patrick DeGraba, "Bill and Keep at the Central Office As the Efficient Interconnection Regime", "... because carriers will view traffic-sensitive interconnection charges as raising their marginal costs, they will tend to raise their traffic-sensitive retail prices, even though the underlying cost structure of the networks may be non-traffic-sensitive."

<sup>10</sup> Ibid.

<sup>11</sup> DeGraba 2000.

<sup>12</sup> See FCC, Eleventh Annual Report to Congress on the State of Competition in the Commercial Mobile Radio Services (CMRS), Industry REPORT (FCC 06-142), available from:

[http://wireless.fcc.gov/index.htm?job=cmrs\\_reports](http://wireless.fcc.gov/index.htm?job=cmrs_reports)

<sup>13</sup> Average Revenue Per User – a key industry metric



charges. It should be noted also that these operators have typically gone beyond the retail price caps rather than stick to them as larger operators have.

The introduction of unilateral roaming negotiations would facilitate wholesale price competition in Member States which could be translated into much lower retail prices by operators that believe there is price elasticity of demand present.

Such a retail price dynamic would seem to have the potential to obviate the need for long term regulation of tariffs. It is suggested as noted above that certain operators suggest there is a strong retail price elasticity of demand for roaming services. If this is true then their actions are likely to ensure an unassisted transfer of wholesale price reductions to the retail level. In such circumstances it can be conceived that differences between domestic and roamed traffic will reduce to such an extent that flat rate Europe-wide offers could be made.

If retail price elasticity of demand does not exist then policy makers should reconsider the equity of the retail price caps more fundamentally<sup>14</sup>. It would appear therefore that irrespective of the elasticity of demand, policy makers and legislators should remove retail price controls in any subsequent roaming regulation.

The long term solution for roaming has often been suggested as a common spectrum allocation across Europe but that seems unlikely in the short term. More worryingly there is no evidence that this would lead to greater competition. On the contrary, the indications are that even the evolution of a more harmonised European spectrum allocation regime would little effect. Most mobile network owners already manage different spectrum allocations within country and doing so across Member States creates no greater difficulties from a technical perspective. Rather it would appear that (almost) pan-European operators such as Vodafone, Telefonica and Orange could already make European offers but choose not to. The reason they choose not to make European offers is that they can capture higher revenues by segmenting the market geographically.

The author believes that with unilateral roaming offers, small competitive operators who have voiced a belief in retail price elasticity are likely to bring forward pan-European offers if the resulting wholesale offers permit it. The vision of such a roaming regime is in line with the views of the Commission as set out in the Digital Agenda document wherein the view is set out that roaming prices may be eliminated where one of the key targets would appear to be that *the difference between roaming and national tariffs should approach zero by 2015*<sup>15</sup>.

## **Parallels with termination pricing**

There appears to be such significant parallels with termination pricing in particular when we consider mobile to mobile (M2M) termination. Since mobile firms operate in rather tight oligopolies, competing repeatedly against a small number of rivals, they may recognise that their repeated interaction can be used to sustain high prices in a “tacit” way, i.e., without any explicit co-ordination. Whether or not tacit collusion is easy to sustain depends on a fundamental trade-off: the “gain” from deviation against the “punishment”. Due to the strategic interaction in the market for mobile customers, “off net” M2M incoming calls may also involve additional effects. In particular, the wholesale incoming price may be used to restrict competition over the price of outgoing retail calls (joint dominance), or to exacerbate single dominance problems (a high incoming off net price may

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<sup>14</sup> If elasticity of demand is low, then the retail price controls lower the cost of calls for frequent travellers who most likely are business travellers. MNOs would appear to have maintained EBITDA rates in the face of the roaming regulation suggesting that pricing elsewhere rose. In the presence of low elasticity of demand, the result is therefore a transfer from one set of consumers to another (business travellers) which would be difficult to justify as the basis of a public intervention.

<sup>15</sup> [http://ec.europa.eu/information\\_society/digital-agenda/documents/digital-agenda-communication-en.pdf](http://ec.europa.eu/information_society/digital-agenda/documents/digital-agenda-communication-en.pdf)

reduce the ability of customers subscribed to rival networks to make off net calls). The suggestion in the literature described below is that though these problems are a possibility, overall they seem to represent less of a concern from the perspective of ex ante regulation.

The reason is an originating MNO faced with a high price for termination provided by another MNO may threaten to charge a similarly high price for termination on its network to that MNO. However, whether or not this is a credible threat depends on the impact this would have on profitability of both MNOs. In this context, there are different sets of results from the literature.<sup>16</sup>

While bilateral wholesale negotiations can reduce inefficiencies, given the reciprocal nature of bargaining and this is particularly true for negotiations among symmetrically-placed networks, bilateral negotiations may be used to affect the intensity of competition at the retail level. The nature of collusion may be different:

1. Collusion may happen in a “static” framework by setting high termination rates because of a “raise-each-other’s-cost” effect. This result holds true only under particular circumstances, namely retail prices should be linear (which may be applicable to pre-paid cards), while it does not apply under more sophisticated retail pricing structures (two-part tariffs, e.g., monthly rental plus price per minute of usage).
2. Collusion may also happen in a more standard “dynamic” framework, where networks repeatedly interact with each other. The role of wholesale termination charges may be one of giving a “focal” reference point to set collusive retail prices. Notice that, in this case, joint dominance should be established at the retail level, while the wholesale level may facilitate reaching the collusive agreement.

However, the experience to date would suggest that in the absence of regulation, the incentives to tacitly collude by setting higher termination rates so as to maintain a higher retail price floor trump other effects.

For example, the Italian retail market prior to the introduction of both competition and before any termination regulation, demonstrated possible co-ordinated effects at the retail level which dissipated in the presence new entry (and the introduction of termination regulation)<sup>17</sup>. Therefore the evidence would suggest that in the case of the termination subset that is closest to international roaming, namely M2M calls, although low termination prices might be expected, in fact high prices have evolved (where unregulated) in order to preserve retail charges at a particular level.

## Market Structure

It should be noted at this point that the market structure of roaming does not amount in any sense to a two-sided market.

Certain markets have a structure whereby certain parts serve to bring two distinct sides of a market together. Crucially, the demand elasticities on either side of the platform mean that the structure of prices is very important to the levels of consumption. Therefore, the *structure* of prices often plays a crucial role in bringing the two sides of the market together<sup>18</sup>.

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<sup>16</sup> See J.-J. Laffont and J. Tirole (1998), *Competition in Telecommunications*, MIT Press, Cambridge (MA); M. Armstrong (2002), “The Theory of Access Pricing and Interconnection”, in M. Cave, S. Majumdar and I. Vogelsang (eds.), *Handbook of Telecommunications Economics*, North Holland, Amsterdam; I. Vogelsang (2003), “Price Regulation of Access to Telecommunications Networks”, *Journal of Economic Literature*; C. Cambini and T. Valletti (2005), “Information Exchange and Competition in Communications Networks”, CEPR, London.

<sup>17</sup> See the 2005 Italian Market 15 case notification to the Article 7 procedure

<http://circa.europa.eu/Public/irc/info/ecctf/library?l=/italia/registeredsnotifications/it20050259&vm=detailed&sb=Title> .

<sup>18</sup> See Rochet/Tirole (2003).

This is the crucial characteristic that distinguishes a two-sided market from a conventional market. Notably, it can be perfectly rational to subsidise one side of the market or the other, so as to ensure adequate participation from both sides. Two sided markets have been with us for a long time but were not always recognised as such. The classic example is a singles bar (platform) that finds it rational to offer free drinks to ladies (subsidised side) in order to entice men (paying side) in order to ensure that both are present in adequate numbers.

A more recent example can be seen in publishing where the medium can be viewed as the platform with authors on one side and readers on the other side. Adobe Acrobat which is now used almost universally was initially a failure because the writer was free and reader was charged.

However, the reader side of market was very price elastic and so very few readers were sold, with few potential viewers authors had no need to publish on the platform. By giving the reader away for free, a huge market was created instantly which writers (who were not very price elastic when looking at large audience) were eager to access. The result was one side of the market financing the other side of the market to the benefit of all<sup>19</sup>. In a conventional market, for an average incremental price to be less than the corresponding average incremental cost would normally indicate some market failure, possibly predation; however, in a two-sided market, it would be perfectly normal and rational.

Two sided markets involve inter-group network externalities and are relevant in many industries, including telecommunications. Because of these externalities, socially-optimal prices in two sided markets typically depend in some intricate way on price elasticities of demand, inter-group network effects, and costs. This is a complex exercise that can be conducted by taking into account market realities and avoiding mechanical applications of standard definitions and tools.

Also because of externalities, socially-optimal prices in two sided markets, generally, are not purely cost-based. By understanding the nature of problem, it is therefore easy to avoid possible fallacies. For instance, incremental cost pricing is typically not efficient with two sided markets. High individual mark-ups may also not indicate standard market power. A more balanced pricing structure (interpreted as prices being more in line with costs) does not necessarily arise as competition becomes more intense. Also, the removal of alleged cross-subsidies, e.g., decreasing one price (A) and increasing another price (B), does not necessarily benefit the side (A) that pays a price above cost. This is because, by increasing the other price (B), some B users may drop off, thus making the product less valuable to A users as well.

Even if a two-sided market is *assumed* to be perfectly competitive, then the market does *not* work, that is, the market does not produce efficient outcomes. This is in stark contrast with standard one-sided markets: when these markets are competitive, they are also efficient and no regulator should interfere with their working. In two-sided markets, instead, privately chosen prices, even when ideally set by competing firms, will differ from socially-optimal prices. An appropriate intervention can increase consumer and social welfare. Therefore there is an argument to say that two sided markets are to be subject to more, rather than less regulatory oversight. By the same token, in case intervention is needed, regulation has to be appropriate and informed by the theory and analysis of two sided markets. The application of one-sided analysis to two sided markets might produce serious regulatory failures.

However, there is no evidence that suggests that wholesale roaming markets may be two sided even if mobile calls themselves are. The market in question clearly a market where the costs of roaming in country A can stand independently of the offers from Country B and where any price linkage is a distortion linking two independent transactions rather than competitively driven.

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<sup>19</sup> Thomas Eisenmann, Geoffrey Parker, and Marshall W. Van Alstyne. Strategies for Two-Sided Markets, Harvard Business Review October 2006

## Next Steps

If it is accepted that the structure of current contracts is inappropriate and prohibited on an existing or new legal basis, then questions arise about what would succeed the current market structure. It is suggested here that two aspects need to be dealt with in the short term, the first being a continued but modified form of the current regulation and the second being the enablers to support a potential new market structure.

### *Continuation of the existing regulation.*

The current structure of balancing traffic between roaming operators means that in practice it is only the marginal traffic which actually effects the operator's wholesale revenues.

However, as described in the parallels with termination pricing above the presence of (notionally) higher wholesale rates has been shown in previous analysis to be a very real consideration in terms of the setting of retail prices. Above-cost termination rates create a floor to the retail pricing<sup>20</sup>. Above-cost roaming charges can have a similar impact. Where termination rates exceed an efficient level of cost they tend to make it difficult for carriers to offer flat-rate calling plans. But with reduced wholesale prices there would be greater scope for offering various flat-rate packages as a lower wholesale cost will reduce their exposure in the event of a significant increase in usage at the retail level. As noted above, the impact of Regulation 544/2009 has led to two competing views in the market as to what the impact of the lower prices in the market have been and whether or not there is significant price elasticity of demand.

The current proposal is for a significant further reduction in wholesale termination charges to a level which would likely remain well above cost but which would also allow a significantly increased scope for retail price competition. The 'net' impact of such a price reduction would be relatively minor for large MNOs given their ability to balance out traffic with roaming partners. Smaller operators would benefit from lower wholesale costs which would permit retail price innovations.

It is suggested that the wholesale price reductions should be combined with a loosening of the retail price controls in the current regulation. This in practice would serve to demonstrate whether or not there was retail price elasticity of demand present on the market with the two views choosing their preferred path. If indeed it proves to be the case that there is no retail price elasticity of demand there are other, more fundamental issues of social equity that would need to be addressed in the current regulation. If on the other hand, elasticity can be demonstrated then the pass through of low wholesale charges to the retail level can be expected to be self sustaining.

### *Enablers to support a potential new market structure*

The current roaming market is well established with contracts in place and negotiation procedures established to modify and update those contracts as appropriate. The transition to a new arrangement for such a large market segment would need to be carefully managed. One idea which policy makers might consider which could by itself support and facilitate unilateral trading of traffic is the creation some secondary trading platform for the exchange of roaming traffic capacity in much the same way as energy is traded today on spot markets. Spot energy market allows producers of surplus energy to instantly locate available buyers for energy, negotiate prices within milliseconds and deliver actual supplies to the customer just a few minutes later. While spot markets can be either privately operated or controlled by industry organizations or government agencies a high degree of trust and credibility is an absolute requirement and the GSMA organisation would seem to be the obvious candidate to host (design?) and manage such a trading platform

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<sup>20</sup> J.-J. Laffont and J. Tirole (1998), *Competition in Telecommunications*, MIT Press, Cambridge (MA)

In the UK for instance the National Balancing Point, commonly referred to as the NBP, is a virtual trading location for the sale and purchase of UK natural gas. It is the pricing and delivery point for the ICE (Intercontinental Exchange) natural gas futures contract market.

It is the most liquid gas trading point in Europe and is a major influence on the price that domestic consumers pay for their gas at home. Gas at the NBP trades in pence per therm so trading in very small units is available.

What is particularly interesting about the NBP from a potential roaming perspective is that trades made at the NBP are not required to be balanced, and there is no fixed penalty for being out of balance. Instead, shippers out of balance at the end of the day are automatically balanced through a 'cash-out' procedure whereby the shipper is automatically made to buy or sell the required quantity of gas to balance their position at the marginal system buy or sell price for that day. This cash out process is not considered to be a penalty in the same way as those imposed on shippers in continental markets, because the cash-out prices are often very close to the spot price. As a result of this daily market liquidity, the UK's NBP is frequently used to balance a shipper's position on the continent by way of the Bacton - Zeebrugge interconnector.

Trades at the NBP are made via the OCM trading system which is an anonymous trading service managed by APX Group to which offers or requests for gas at a nominated price can be posted.

The suitability of such a trading platform and how it would work would need to be examined in greater detail but there are interesting aspects to energy spot markets that could be deployed as a successor to the current roaming practices. It is also important to note that most of the edifice for such a trading platform already exists within the GSMA and that it would simply need to be adapted to its new circumstances.

Today within the GSMA, a roaming broker enables a Broker Service Provider (e.g., a mobile Operator) to act as a "hub" for roaming traffic as specified in the GSMA 'Open Connectivity Roaming Model'. The key advantage is that hubbing can be used to improve connection reach and efficiency. With the use of the hubbing methods, rather than the mesh of hundreds of bilateral connections, the Roaming Broker concept uses agreements and implementations between a GSM Operator and the Roaming Broker. This concept optimizes costs of setting up and managing bilateral roaming agreements. It is used today mostly by small operators who are low priority in terms of roaming agreements and it is often their only possibility to activate roaming in a given country. Under the hub model in use today, any operator can sign one agreement with the hub and conduct one set of technical tests and thereafter have access to all other roaming partners that are connected to that hub. Today it is viewed as a second best alternative by operators to bilaterally negotiated since contracts tend to be more commercially advantageous. It is possible that a large hub could be used as the trading platform envisioned.

A key advantage to using the current platform is that it is already in place, is technologically proven and also supports technical services such as partner short codes. Indeed, one of the principle advantages to the overall proposal is that it does not interfere with the established end user services at all nor does it change the fundamental principles of the current roaming relationship (that end users face a charge for receiving a call when abroad, that the billing relationship remains at all time with the domestic supplier, that the existing and seamless cross border service continuity stays in place without any end-user activity). Instead, the current proposal seeks to change the manner in which wholesale roaming is negotiated to allow a competitive dynamic to evolve at the wholesale level of the market.

## Conclusions

This paper suggests that international roaming markets suffer from structural flaws in the way that roaming agreements are established in Europe. The price for wholesale roaming services in a given country is driven principally by the amount of traffic that an operator is willing to send back to the country requesting a price offer rather than on the basis of the roaming services requested. In this way, the wholesale price becomes largely illusory with traffic volumes being netted off against each other. This has two negative impacts, the first is that by making traffic exchange a condition of the price setting, only operators with large shares in the domestic market are in a position to reach agreements for significant amounts of traffic (so domestic market share determines the resulting share of the international roaming market when there is no logical linkage *a priori*); the second is that price competition at the wholesale level is greatly dampened such that a small domestic operator with excess capacity and low wholesale prices will win limited new custom since they have very low volumes of traffic to return to the requesting operator.

Breaking the link between prices offered in a given country and the volumes of returned traffic will resolve this issue and introduce price competition at the wholesale level. This could be achieved by prohibiting the linkage between prices offered and returned traffic or simply by obliging operators to trade roaming capacity on a spot market. It is also suggested that there is a cadre of operators who believe that there is price elasticity of demand at the retail level for roaming services and who have a vision of flat rate European tariffs. It is suggested that their actions are likely to ensure an unassisted transfer of wholesale price reductions to the retail level and it can be conceived that differences between domestic and roamed traffic will reduce to such an extent that flat rate Europe-wide offers could be made. If retail price elasticity of demand does not exist then policy makers should reconsider the equity of the retail price caps more fundamentally.

In any transition from the current to a future regime a number of enablers would be required. The current roaming model is well established and has deep roots; any migration would need to be carefully managed. It is proposed that consumer welfare would be enhanced by prolonging the existing regulation with lower wholesale charges and withdrawing retail price regulation. In parallel, policy makers should establish a trading platform together with the GSMA to allow the purchase of international roaming capacity on a unilateral basis. It is suggested that such a trading platform already exists in a form (hubbing centres) and that it would need to be modified but that changing the current regime could be achieved with minimum disruption and cost to the industry. Leveraging existing mechanisms to change the charging structure has many advantages but principle amongst those advantages is that it does not change the fundamental principles of the current roaming relationships implying that any transition should be unobservable by end users except in the level of charging observed.

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